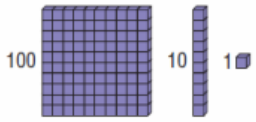
5.1 Modelling Polynomials

FOCUS

- Model, write, and classify polynomials.

In arithmetic, we use Base Ten Blocks to model whole numbers. How would you model the number 234?



In algebra, we use algebra tiles to model integers and variables.

Yellow represents positive tiles. Red represents negative tiles.

How are Base Ten Blocks and algebra tiles alike?

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Terminology

1. Terms:

A single number or variable, or the product of numbers and variables.

2. Coefficients:

The integer number found in front of a variable.

3. Degree:

The term with the variable with the largest exponent determines the degree.

EXAMPLES:

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More Terminology

4. Constant term:

A term that does not have a variable in it; it only contains an integer.

5. Polynomial:

One term or the sum of terms whose variables have whole-number exponents.

EXAMPLES:

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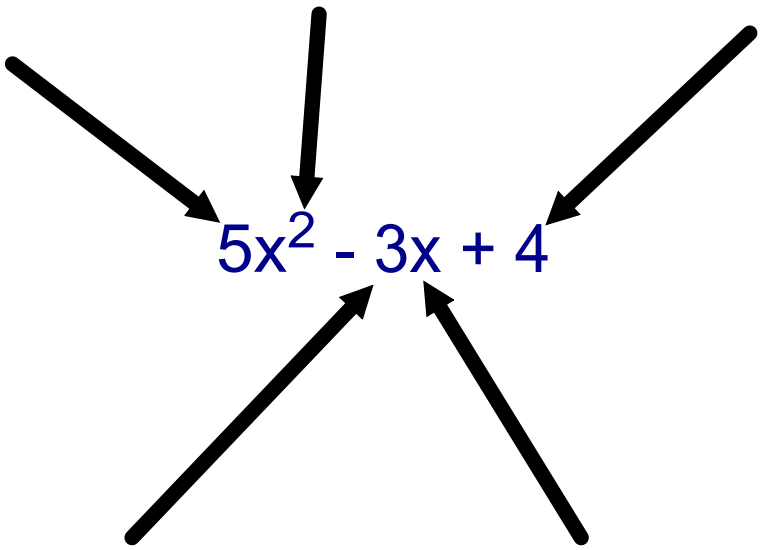

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Classifications of Polynomials

A **monomial** has 1 term.

Ex:	Drawing
$4a$	
6	
$-2p^2$	

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A **binomial** has 2 terms.

Ex:	Drawing
$2c - 5$	
$2m^2 + 3m$	

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A **trinomial** has 3 terms.

Ex:	Drawing
$2h^2 - 6h + 4$	

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Example 1 **Recognizing the Same Polynomials in Different Variables**

Which of these polynomials can be represented by the same algebra tiles?

a) $3x^2 - 5x + 6$ b) $-5 + 6r + 3r^2$ c) $-5m + 6 + 3m^2$

Justify the answer.

SOLUTION:

a)

b)

c)

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YOU TRY!

Write each expression with algebra tiles

SOLUTION:

a) $2x^2 - 5x + 6$

b) $-3w^2 + 4w + 9$

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Example 2 **Modelling Polynomials with Algebra Tiles**

Use algebra tiles to model each polynomial.
Is the polynomial a monomial, binomial, or trinomial? Explain.

a) $-2x^2$ b) $2b^2 - b + 4$ c) $5a - 3$

SOLUTION:

a)

b)

c)

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YOU TRY!

Use algebra tiles to model each polynomial

SOLUTION:

a) $-x^2 + 4$

b) $x^2 + 4x - 6$

c) $3x^2$

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Example 3 Recognizing Equivalent Polynomials

a) Which polynomial does each group of algebra tiles represent?

Model A

Model B

Model C

b) Which of the polynomials in part a are equivalent? How do you know?

SOLUTION:

a)

b)

c)

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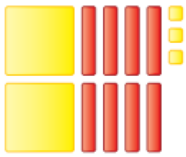
YOU TRY!

Which polynomial does each group of algebra tiles represent



SOLUTION:

a)

b)

c)

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Discuss the ideas

1. In the polynomial $3 + 2p$, which term is the constant term? How are constant terms modelled with algebra tiles?

2. Suppose you are given an algebra tile model of a polynomial. How can you identify the terms, the coefficients, and the degree of the polynomial? How can you identify the constant term?

3. What do we mean by "equivalent polynomials"? How can you determine whether two polynomials are equivalent?

Reflect

What is a polynomial?
How can you represent a polynomial with algebra tiles and with symbols?
Include examples in your explanation.

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Practice

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If Finished in class then attempt these questions

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